UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,852	07/25/2003	James Kevyn Smith	194-28885-US	2654

24923 7590 08/12/2004

PAUL S MADAN
MADAN, MOSSMAN & SRIRAM, PC
2603 AUGUSTA, SUITE 700
HOUSTON, TX 77057-1130

EXAMINER	
GEISEL, KARA E	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/627,852	SMITH ET AL.	
	Examiner	Art Unit	
	Kara E Geisel	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-13,15,16,18 and 20* is/are rejected.

7)☒ Claim(s) *9,14,17 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0703*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed on July 5th, 2003 has been fully considered by the examiner.

Claim Objections

Claim 18 objected to because of the following informalities: it is identical to claim 15. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Klainer et al. (USPN 5,026,139).

In regards to claim 1, Klainer discloses a method for real time determination of emulsion in a formation fluid comprising positioning an optical probe having a probe surface (fig. 2), which can measure changes in total internal light reflectance (column 1, lines 11-20 and 58-68), such that the probe surface is in contact with a formation fluid (column 2, lines 4-18), wherein the probe and its surface are composed of material which can withstand an extended period in contact with the formation fluid (fig. 4; in this case they show repeated measurements over a period of 20

minutes), measuring the total internal light reflectance at the probe surface, and determining in real time therefrom whether an emulsion is present or the degree of emulsification at such surface (fig. 3, column 2, lines 9-12).

Claims 1-8, 10-11, 13, 15-16, 18 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Means (US Pub 2003/0051602).

In regards to claim 1, Means discloses a method for real time determination of emulsion in a formation fluid (page 1, ¶ 7 and page 2, ¶ 15) comprising positioning an optical probe having a probe surface, which can measure changes in total internal light reflectance (page 3, ¶ 29), such that the probe surface is in contact with a formation fluid, wherein the probe and its surface are composed of material which can withstand an extended period in contact with the formation fluid (page 3, ¶ 31), measuring the total internal light reflectance at the probe surface, and determining in real time therefrom whether an emulsion is present or the degree of emulsification at such surface (page 2, ¶ 15).

In regards to claim 2, the optical probe is an attenuated total reflectance probe (page 3, ¶ 29).

In regards to claim 3, the probe includes a photometer that measures light in a wavelength range of from about 400 to about 1500 nm (page 3, ¶s 29-30).

In regards to claim 4, the photometer measures light in a wavelength range of from about 640 to about 680 nm (page 3, ¶32).

In regards to claim 5, the formation fluid is in a pipeline (fig. 1).

In regards to claim 6, Means discloses a method for controlling emulsion formation in a formation fluid (page 1, ¶ 7 and page 2, ¶ 15) comprising placing an optical probe, having a probe surface which can measure changes in total internal light reflectance thereat (page 3, ¶ 29), in contact with a formation fluid, measuring the changes in total internal light reflectance at the probe surface, determining in real time the presence of emulsion in the formation fluid as a

function of the changes in total internal light reflectance (page 3, ¶29), comparing the determination in real time to a predetermined maximum acceptable emulsion present, and effecting a change in the rate of addition, if any, to the formation fluid of an additive effective to reduce the emulsion presence (page 3, ¶s 24-26) wherein the optical probe is composed of a material which can withstand an extended period of contact with the environment to which it is exposed (page 3, ¶ 31), and the rate of addition, if any, to the formation fluid of a demulsification additive (page 3, ¶ 34) is increased when the emulsion presence is greater than the predetermined maximum acceptable emulsion presence, decreased or maintained when no emulsion is detected or when the emulsion presence is less than the predetermined maximum acceptable emulsion presence (page 3, ¶s 25-26).

In regards to claim 7, the optical probe is an attenuated total reflectance probe (page 3, ¶ 29).

In regards to claim 8, the formation fluid is in a pipeline (fig. 1).

In regards to claim 10, the probe includes a photometer that measures light in a wavelength range of from about 400 to about 1500 nm (page 3, ¶s 29-30).

In regards to claim 11, the photometer measures light in a wavelength range of from about 640 to about 680 nm (page 3, ¶32).

In regards to claim 13, Means discloses a system for controlling emulsion formation in a formation fluid (page 1, ¶ 7, and page 2, ¶ 15) comprising a fluid flow path for flowing formation fluid recovered from a subsurface formation (fig. 1, and page 2, ¶ 22), an optical probe (fig. 2, 105), having a probe surface which can measure changes in light reflectance at the probe surface (page 3, ¶ 30), in contact with the formation fluid (page 3, ¶ 31), a processor associated with the optical probe enabling collection of data therefrom (fig. 2, 203), such data corresponding to the presence of emulsion or degree of emulsification in the formation fluid (page 3, ¶ 25), and a

controller associated with the processor enabling translation of data therefrom to initiate action to modify the presence of emulsion or degree of emulsification (fig. 2, 208 and page 3, ¶ 26).

In regards to claims 15 and 18, the optical probe is an attenuated total reflectance probe (page 3, ¶ 29).

In regards to claim 16, the probe can be located wherever detection of emulsification is needed.

In regards to claim 20, the processor and controller are incorporated into a single unit (page 3, ¶s 25-26).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klainer et al. (USPN 5,026,139).

In regards to claim 5, Klainer discloses a method for real time determination of emulsion in a formulation fluid, as disclosed above. It is not disclosed that the fluid is in a pipeline or in a

free water knockout. However, Klainer's invention is generally directed to the probe, not to the container holding the fluid, and it would be obvious to place this probe anywhere real time determination of emulsion in a formulation fluid was needed, including in a pipeline or in a free water knockout.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Means (US Pub 2003/0051602).

In regards to claim 12, Means does not disclose that the demulsification additive is an alkyl phenol resin. However, this type of resin is very well known in the art, and it would be obvious to one of ordinary skill in the art at the time the invention was made to use these resins as the demulsification additive in order to control emulsion formation.

Allowable Subject Matter

Claims 9, 14, 17 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 9, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for controlling emulsion formation in a formation fluid wherein two or more attenuated total reflectance probes are located in a free water knock-out, in combination with the rest of the limitations of claim 9.

As to claim 14, the prior art of record, taken alone or in combination, fails to disclose or render obvious a system for controlling emulsion formation in a formation fluid comprising an automated probe surface cleaning device capable of extracting, cleaning, calibrating, and inserting or reinserting the probe surface, in combination with the rest of the limitations of claim 14.

As to claim 17, the prior art of record, taken alone or in combination, fails to disclose or render obvious a system for controlling emulsion formation in a formation fluid wherein at least three optical probes are located inside the free water knock-out having an oil outflow pipeline and a water outflow pipeline, at positions such that a first probe is at or adjacent to the level of the oil outflow pipeline, a second probe is at or adjacent to the level of the water outflow pipeline, and a third probe is between the oil outflow pipeline and the water outflow pipeline, in combination with the rest of the limitations of claim 17.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is Banks et al. (USPN 5,919,707), Weirich et al. (USPN 6,176,323), McNeil, III et al. (US Pub 2004/0098202), NGK Spark Plug Co., Ltd. (JP 03-186734), and Lindley Flow Technology Ltd. (GB 2 199 404).

Bank discloses a method for real time determination of emulsion in a formation fluid comprising positioning an optical probe having a probe surface, which can measure changes reflectance, such that the probe surface is in contact with a formation fluid, wherein the probe and its surface are composed of material which can withstand an extended period in contact with the formation fluid, measuring the reflectance at the probe surface, determining in real time therefrom whether an emulsion is present or the degree of emulsification at such surface, and controlling the amount of emulsion by an addition of different additives in response to the determining the degree of emulsification.

Weirich discloses a method for real time determination of emulsion in a formation fluid comprising positioning an optical probe having a probe surface, which can measure changes in total internal reflectance, such that the probe surface is in contact with a formation fluid, wherein the probe and its surface are composed of material which can withstand an extended period in contact with the formation fluid, measuring the total internal reflectance at the probe surface,

determining in real time therefrom whether an emulsion is present or the degree of emulsification at such surface, and controlling the amount of emulsion by an addition of different additives in response to the determining the degree of emulsification.

McNeil discloses a method for real time determination of emulsion in a formation fluid comprising positioning an optical probe having a probe surface, which can measure changes in total internal reflectance, such that the probe surface is in contact with a formation fluid, wherein the probe and its surface are composed of material which can withstand an extended period in contact with the formation fluid, measuring the total internal reflectance at the probe surface, determining in real time therefrom whether an emulsion is present or the degree of emulsification at such surface, and controlling the amount of emulsion by an addition of different additives in response to the determining the degree of emulsification.

NGK discloses a method for real time determination of emulsion in a formation fluid comprising positioning an optical probe having a probe surface, which can measure changes reflectance, such that the probe surface is in contact with a formation fluid, wherein the probe and its surface are composed of material which can withstand an extended period in contact with the formation fluid, measuring the reflectance at the probe surface, determining in real time therefrom whether an emulsion is present or the degree of emulsification at such surface.

Lindley discloses a method for real time determination of emulsion in a formation fluid comprising positioning an optical probe having a probe surface, which can measure changes reflectance, such that the probe surface is in contact with a formation fluid, wherein the probe and its surface are composed of material which can withstand an extended period in contact with the formation fluid, measuring the reflectance at the probe surface, determining in real time therefrom whether an emulsion is present or the degree of emulsification at such surface.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9306 for regular communications and 703 872 9306 for After Final communications.

Zandra Smith
Primary Examiner
Art Unit 2877

K.G.

KEG
August 4, 2004